

Article 12 | Infrastructure and Public Improvements

Sec. 12.1 Improvement Requirements

12.1.1 General

A. Applicability

The requirements of this Article shall apply to all development required to submit site plans or plats, unless expressly exempted by the language of the sections below.

B. Mitigation

The approving authority may require on- and off-site improvements to mitigate the impacts of the proposed development.

C. Clearing and Grading

1. All property required to be dedicated, reserved or otherwise set aside and identified on the approved site plan or preliminary plat shall be surveyed, staked, and appropriately marked and protected prior to beginning clearing and grading work.
2. ~~In addition to protecting the areas described above, the subdivider shall perform~~ All clearing and grading work shall be in conformance with the approved site plan or preliminary plat.

D. Floodplains

Base floodplain elevation data shall be provided for all subdivision proposals that are impacted by a floodplain as required by the Flood Damage Protection Ordinance.

E. Compliance

~~Prior to any land disturbing activity, the applicant subdivider shall comply with all Federal, State, and County local permitting requirements. All applicable sedimentation and erosion control standards shall be followed.~~

~~The subdivider shall cause All property identified on the approved Preliminary Plat as dedicated, reserved, or otherwise set aside for one or more of the above purposes to be surveyed, staked, and appropriately marked and protected prior to beginning clearing and grading work.~~

~~Stormwater Management~~

~~Stormwater drainage improvements shall be designed, constructed, and maintained, according to all applicable City, County, State, and Federal requirements. Points of discharge shall be within the subdivision unless otherwise approved. Filtration, infiltration, retention, and detention methods and devices shall be used as required.~~

12.1.2 Survey Monuments and Markers

Permanent survey monuments and markers shall be installed in accordance with N. C. General Statutes 39-32 and 47-30, as supplemented by City/County and N. C. Department of Transportation requirements.

12.1.3 Public Facility Sites

When a proposed site for any public facility, including but not limited to schools, parks, open space/greenways, or other public use sites, ~~as is shown on an adopted plan, falls within a proposed subdivision,~~ the site shall be reserved and/or dedicated temporarily set aside and/or reserved in accordance with Sec. 3.6.6F, Reservation of Public Facility Sites and Lands. ~~shall be followed. Such sites shall receive credit for density purposes of 50% in residential developments.~~

12.1.4 Required Easements

- A. ~~Utility, Storm drainage stream buffers and other utility easements for water, sanitary sewer, electricity, gas and communications improvements shall be provided in the location and to the width as required by the provider. utility.~~
- B. Easements for other purposes, including but not limited to trails and greenways, scenic views, historic preservation, cemetery access, and unique natural sites, shall be designed for reservation or dedication as appropriate.
- C. All site plans and plats shall exhibit standard easement notes stating the type and purpose of the easement along with a list of prohibited uses/activities within the easement.
- ~~Where economically feasible electricity and communications lines should be placed underground. Easements for storm drainage improvements and stream buffers shall be provided as required by City/County policies and regulations.~~

Sec. 12.2 Ingress and Egress Requirements

12.2.1 Dedicated and Publicly Maintained Streets

Dedicated and publicly maintained streets shall be required for development in all ~~zones districts~~ except as described in Sec.12.2.2A ~~below~~. An unlimited number of building permits may be issued for land parcels ~~adjoining adjacent to~~ a public street that is not maintained by either the City or NCDOT. However, no occupancy permits shall be issued unless the street has been accepted for maintenance by the City or NCDOT, ~~whichever as appropriate~~, or the construction has been certified to be acceptable for maintenance by the City or NCDOT, ~~whichever as appropriate~~, or a surety instrument has been posted in an amount adequate to complete construction to the satisfaction of the City Public Works Director or NCDOT, or appropriate designees. Engineer. For streets outside the corporate limits, ~~must the applicant~~ shall request NCDOT maintenance as soon as the NCDOT occupancy requirement is met; ~~and not more than twice the minimum number of units required for~~ maintenance by NCDOT may be issued Certificates of Occupancy ~~occupied~~ prior to acceptance for maintenance by NCDOT.

12.2.2 Other Forms of Access

No building shall be erected or enlarged on a parcel in any district unless such parcel abuts upon or has access to a publicly-accepted and maintained street, except in the following circumstances.

A. Private Streets or Roads

Private streets or roads ~~shall may~~ be permitted in the following circumstances. ~~These~~ Such streets shall be designed and constructed, ~~and maintained~~ according to ~~Engineering~~ Public Works Department or NCDOT standards.

1. Residential

- a. For up to six single-family detached or duplex ~~and triplex~~ lots;
- b. For multifamily developments; ~~and~~
- c. For those portions of a PDR District development which do not contain single-family dwelling or;
- d. If shown on an approved development plan as private streets.

~~Any single-family dwellings in a PDR shall be required to be accessed by publicly maintained roads unless it can be demonstrated to the approving body that unique circumstances exist which will warrant private roads.~~

2. Nonresidential

For ~~all~~ any nonresidential development in a nonresidential district. zone.

B. Ingress/Egress Easements Other than Private Streets

Ingress/egress easements not involving construction of a private street shall be permitted in the following circumstances:

1. In the Rural Tier

Easements ~~are~~ shall be allowed for the construction of one single-family residence on an existing lot of record as of September 16, 1996. ~~parcel.~~ The

1 parcel shall not be further subdivided ~~after the effective date of this~~
2 ~~amendment.~~

3 **2. Other than in the Rural Tier**

4 Lots with ingress/egress easements of record, and developed through use of the
5 easement, as of ~~the effective date of this amendment~~ September 16, 1996 may
6 continue.

7 ~~Dedicated Public Street—No Public Maintenance: Shall be permitted outside~~
8 ~~the UGA if the street accesses 6 parcels or less. No design or construction~~
9 ~~standards shall be applicable to this situation however, the right of way~~
10 ~~dedication shall comply with minimum design requirements for public and~~
11 ~~private residential streets within Durham City and County.~~

12 **12.2.3 Acceptance by City of Private Streets**

13 Prior to acceptance by the City, any private street not constructed and maintained to
14 public standards shall be improved to City standards.

Sec. 12.3 Streets

12.3.1 Street Layout

~~Within any proposed subdivision, the proposed street layout shall be coordinated with the existing and planned street system of the surrounding area and shall conform to official plans for major and minor thoroughfares and collector streets, including the Durham Chapel Hill Carrboro Urban Area Thoroughfare Plan, with respect to location, alignment, and cross-section, etc. Street design shall satisfy the minimum requirements of the City of Durham Public Works Director or and the NCDOT, or as applicable designees. The following street standards may be modified or varied by the approving authority transportation agency in order to accommodate unique subdivision conditions.~~

A. Right-of-Way

1. A proposed street right-of-way ~~must~~ shall be of sufficient width to accommodate the required cross section of the roadway. ~~However,~~ In no case shall the proposed right-of-way be less than the currently adopted standards unless the approving authority determines that special circumstances exist which make the dedication or reservation of the full right-of-way unnecessary or impractical.

2. Right-of-way shall be dedicated and/or reserved and improvements installed to City or NCDOT standards for each class of street as follows:

a. Freeways

The entire right-of-way shall be reserved for future acquisition and improvement by the public.

b. All Other Public Streets

- (1) New Streets. ~~The required right-of-way required to accommodate the proposed development shall be dedicated, with the remainder reserved. subdivider~~ The applicant shall be required to install improvements sufficient to service traffic demands of proposed development.

- (2) Existing Streets. ~~subdivider~~ The applicant shall dedicate or reserve additional right-of-way and install improvements as required to serve proposed development. Other improvements will shall be installed according to the City Public Works Reference Guide for Development or NCDOT standards, as applicable. -public street improvements programs.

~~Private Streets and Roads~~

~~Permanent private access easements, streets, and roads shall be permitted in residential subdivisions serving no more than 6 lots or within Unique Planned Developments or any nonresidential development. Such facilities shall be designed and constructed to the minimum design standards for public and private residential streets within Durham City and County. Roads intended for future acceptance by the NCDOT as public roads shall be designed and constructed to the department's standards. Rights of way or~~

easements as required for approved private streets and alleys shall be established and improvements installed to the minimum design standards for public and private residential streets within Durham City and County. Subdivisions utilizing private streets shall be subject to 12.3.1B and shall not receive final plat approval until the subdivider furnishes an attorney's certification that restrictive covenants, deeds of easement, and/or other legal documents have been filed for perpetual road maintenance and access arrangements for adjoining properties and for City/County services. All final plats containing private streets and roads shall contain a note requiring a disclosure statement to be furnished to all subsequent purchasers of property shown on the plat.

B. Grades and Curves

Proposed streets shall be designed in accordance with the standards and specifications of the City Public Works Department or NCDOT, as applicable. ~~to produce street gradients which provide for safety, proper drainage, and usable lots and to fit the natural contours of the land in order to minimize earthmoving.~~

Curves

~~Horizontal and vertical curves and roadway alignment shall be governed by anticipated street classification, traffic volume, design speed, sight distances, and other relevant standards.~~

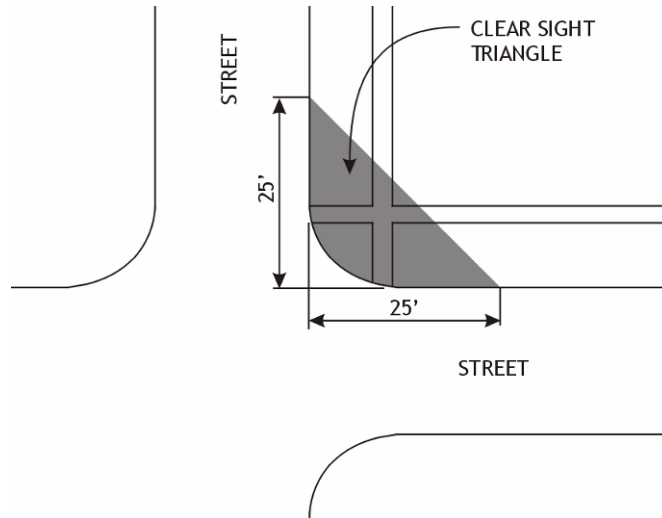
C. Intersections

1. Street intersections shall be as nearly at right angles as possible ~~and with no intersection angle should be less than 75 degrees~~ the minimum established by the Public Works Department or NCDOT, as applicable.
2. Offset intersections shall be avoided. Intersections on residential streets which cannot be aligned ~~should~~ shall be separated by a minimum distance ~~between centerlines determined by the Public Works Department or NCDOT, as applicable.~~ of 200 feet. For higher level streets, this distance ~~will~~ shall be determined ~~on a site by site basis~~ after considering possible signalization, necessary storage, and sight distance, as well as other design constraints.
3. Adequate sight distances shall be provided at all intersections between streets and at driveway intersections with streets.
4. Property lines at corners of all intersecting streets shall, as a minimum, be established as the hypotenuse of a triangle with each leg having a length of at least 20 feet or as required by the Public Works Department or NCDOT along both street rights-of-way.

D. Sight Triangles

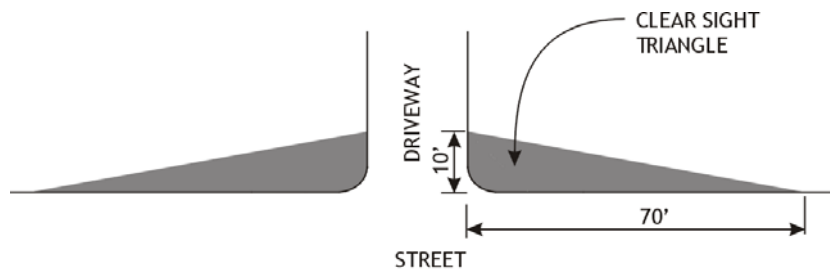
1. Corner Lots

On any corner lot, a sight triangle shall be ~~established~~ maintained. The sight triangle shall be a triangle formed by extending lines from the intersections of two streets to points 25 feet from the corner of the intersecting streets and then connecting the two points.



2. Driveways

For any driveway, a sight triangle measuring ten feet from the back of curb and extending 70 feet from the edge of each side of the driveway shall be required.



3. Design Standards

Within the sight triangle, no materials which would impede traffic visibility shall be allowed. ~~Generally~~ Structures, fences and plant materials that extend into the sight triangle between are more than three two and one half feet and eight feet in height, as measured from the grade of the street or drive, shall not be allowed. ~~within the vision triangle~~

E. Cul-de-sac Streets

~~Cul-de-sac streets shall not be used to avoid needed street connections, existing or potential. Such streets shall not be longer than 800 feet and shall be terminated by a circular right-of-way having a minimum diameter of 100 92 feet or an approved alternative turnaround as determined by the Public Works Director or NCDOT, or~~

appropriate designees. The length of cul-de-sac streets shall be measured from the centerline of the bulb to the edge of pavement at the nearest intersection.

F. Stub Outs

1. Unless exempted below, stub outs shall be required on each side (as defined by each of the cardinal directions) of a development as follows:

a. Rural Tier. At least one stub out for every 2,800 linear feet on any single side of the proposed development.

b. Suburban Tier. At least one stub out for every 1,400 linear feet on any single side of the proposed development.

c. Urban Tier. At least one stub out for every 1,000 linear feet on any single side of a proposed development.

2. Stub outs shall not be required adjacent to existing development that has not made any accommodation for such connections or to adjoining sites that are permanently protected from development through conservation easements or ownership that precludes development. Nor shall stub outs be required if the only point of access would require crossing floodplains, steep slopes, or other similar natural features. Stub outs shall also not be required when the existing street pattern in the area of the proposed development already provides for vehicular connections at intervals no greater than one-half mile apart in the Rural Tier or one-quarter mile apart in the Suburban Tier.

3. The proposed street layout in new development shall be coordinated with the existing street system, with connections made at all stub outs. Where no full connection can be made as a result of the topography of the site being developed, the developer shall install a cul-de-sac bulb or other turnout facility at the stub out constructed according to the City Public Works Department Reference Guide for Development.

G. Alleys

Alleys may be required along the rear lot line of commercial or industrial property, along the rear lot line of lots fronting on thoroughfares, or where the lots are less than 50 feet wide. Alley widths shall be determined by their proposed use.

H. Reserve Strips Controlling Access

The reservation of private property strips of too narrow a depth to permit development as a means of controlling access to public ways shall not be permitted.

I. Frontage Roads and Marginal Access Streets

Where a subdivision abuts or contains a controlled or limited access street or thoroughfare, whether existing or proposed, a marginal access street or frontage road may be required.

12.3.2 Street Connectivity Requirements

An interconnected street system is necessary in order to promote orderly and safe development by ensuring that streets function in an interdependent manner, provide adequate access for emergency and service vehicles, enhance access by ensuring connected transportation routes, and provide continuous and comprehensible traffic routes.

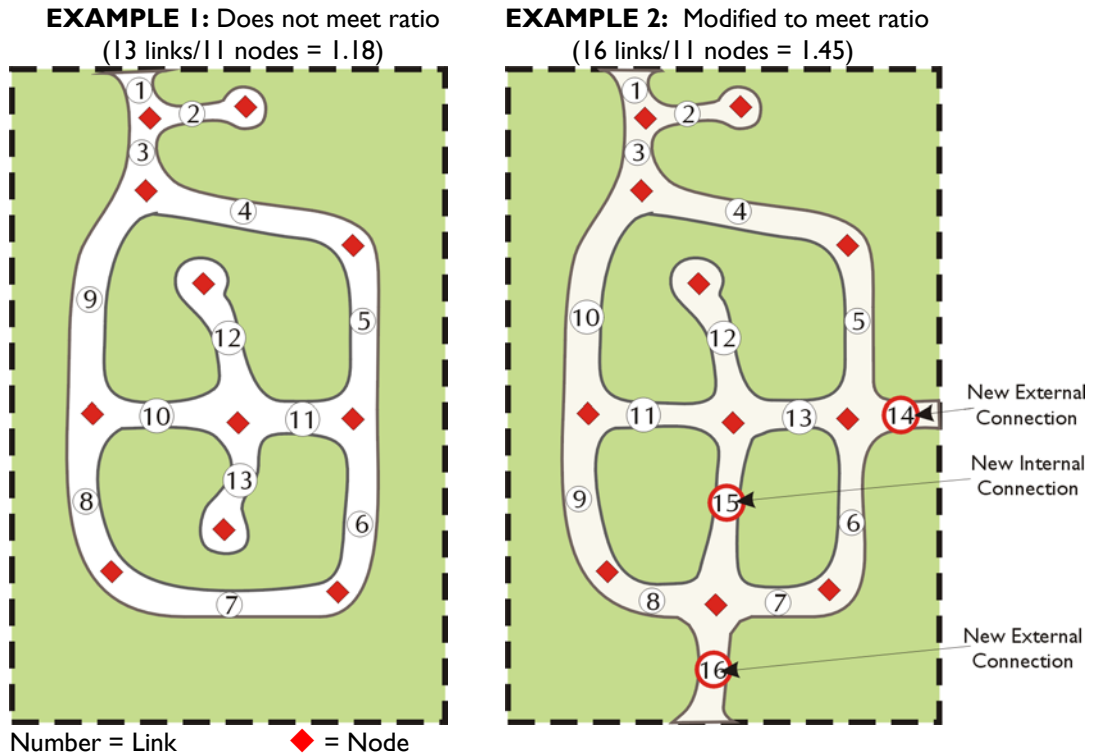
A. Connectivity Defined

Connectivity shall be defined by the ratio of links to nodes in any subdivision.

- 1.** The connectivity ratio shall be the number of street links divided by the number of nodes or end links, including cul-de-sac heads.
- 2.** A link shall be any portion of a street, other than an alley, defined by a node at either end. Stub-outs to adjacent property shall be considered links. For the purpose of determining the number of links in a development, boulevards, median-divided roadways, and divided entrances shall be treated the same as conventional two-way roadways.
- 3.** A node shall be the terminus of a street or the intersection of two or more streets.
 - a.** Any curve or bend of a street that exceeds 75 degrees shall receive credit as a node. Any curve or bend of a street that does not exceed 75 degrees shall not be considered a node.
 - b.** A divided entrance shall only count once.

B. Required Ratio**1. Street Network**

- a.** The street network for any subdivision with internal roads or access to any public road shall achieve a connectivity ratio of not less than 1.40 in all tiers except the Rural Tier, measured within the subdivision.
 - b.** Within the Rural Tier, the street network for any subdivision with internal roads or access to any public road shall achieve a connectivity ratio of not less than 1.15, measured within the subdivision.
- 2.** Street links and nodes along a collector or arterial street providing access to a proposed subdivision shall not be considered in computing the connectivity ratio.
 - 3.** Stub-outs that cannot be constructed pursuant to Sec. 12.3.1.F shall be considered as being present as a link at the ratio of one link per side as provided in Sec. 12.3.1.F for purposes of determining if the required ratio has been met.



C. External Access Required

1. External access to development shall be provided as indicated below. In determining the number of access points that shall be required, the cumulative impacts of prior developments on the roads shall be considered.
 - a. For developments with 90 or fewer lots, at least one point of access to the roadway network shall be provided.
 - b. For developments with between 91 and 120 lots, at least two points of access to the roadway network shall be provided.
 - c. For developments with more than 120 lots, at least three points of access to the roadway shall be provided.
2. A divided entrance shall count as one point of access.
3. Where DENR rejects a proposed stream crossing and such information is provided to the DRB, an exception shall be made by allowing fewer external access points into the subdivision.
4. The Development Review Board may approve variations in the requirements of this section when additional access points are precluded in the following circumstances:
 - a. if the only additional access points available would require crossing floodplains, steep slopes, or other similar natural features; or,
 - b. when the existing development pattern precludes additional access points and fewer units than would otherwise be allowed would be out of character with the surrounding development.

12.3.3 Street Names

Street names shall not duplicate nor closely approximate existing street names within the City or County. Extensions of existing, named streets shall bear the existing street name. A complete list of previously used names shall be maintained by the Planning Department. ~~City/County staff~~.

12.3.4 Street Signs and Markers

A. Standard street name signs shall be installed at one corner of all street intersections, including private streets. The size, design, materials, location, and installation of the signs shall be in accordance with City Public Works Department or NCDOT standards, as applicable.

B. Signs denoting the beginning and ending of public maintenance shall also be erected and maintained on private streets.

C. Signs denoting the right-of-way boundaries of dedicated or reserved, unopened streets shall be erected and maintained according to City or County standards.

12.3.5 Street Lights

Street lighting, as required for traffic safety and property security, shall be installed in conformance with ~~City/County~~ City Public Works Department or NCDOT policies, as applicable. The design, materials, location, and installation shall conform to ~~City/County~~ all applicable City Public Works Department or NCDOT standards, and applicable public utility standards, including appropriate separation from street trees.

Sec. 12.4 Pedestrian and Bicycle Mobility

12.4.1 General

- A. Sidewalk, walkway, on-road improvements, and trail systems sufficient to serve both existing and projected pedestrian and cyclist needs shall be labeled on reflected in all site and subdivision plans. Such systems shall be designed to connect with all elements within the development, adjacent areas, and transit stops and may include either conventional sidewalks along public or private streets rights-of-way, wide outside travel lanes, bike lanes on roadways, and walkways and trails in alternative locations as appropriate. Design, location, dimensions, dedications, easements, and reservations shall conform to applicable City and County Urban Growth Area policies and plans for sidewalks, bicycle routes, and trails.
- B. ~~Such~~ Walkways and trails shall be designed to maximize the safety of users and the security of adjoining properties with respect to location, visibility, and landscaping.

12.4.2 Sidewalk Requirement

Unless the approving authority approves an alternate walkway, a conventional sidewalk shall be provided along streets within the right-of-way as shown in the table below unless the approving authority determines that the cost of providing the required sidewalks is disproportionate to the cost of the proposed development. In such cases a portion of the required sidewalk may be required or the requirement may be waived, at the discretion of the approving authority. Further adjustments to this location, if required, may be allowed by the Public Works Director, or designee during construction.

Street Type	Rural Tier	Suburban Tier	Urban Tier	Compact/ Downtown Tiers
Freeways	None	None	None	None
Major/Minor Thoroughfare	None	Both Sides	Both Sides	Both Sides
Collectors	None	Both Sides	Both Sides	Both Sides
Nonresidential Street				
At least 2,000 daily trips (post development)	None	One Side	Both Sides	Both Sides
Less than 2,000 daily trips (post development)	None	One Side	One Side	Both Sides
Residential Street	None	One Side	One Side	Both Sides
Cul-de-Sac				
400 or more linear feet	None	One Side	One Side	Both Sides
Less than 400 linear feet	None	None	One Side	Both Sides

12.4.3 Alternate Requirement

- A. A pedestrian walkway may be provided outside of the right-of-way when the approving authority determines the walkway will have the same functionality as the conventional sidewalk required in Sec. 12.4.2 above.
- B. A pedestrian walkway may be provided outside of the right-of-way with a reduced level of functionality when the approving authority determines that the construction

of a conventional sidewalk within the right-of-way is impractical due to impending road widening or other physical limitations.

Alternate walkway and trail systems, located outside of street right-of-way, shall be planned to serve pedestrian and bicycle traffic circulation as satisfactorily as would conventional sidewalk, and to reach locations which would otherwise be inaccessible.

12.4.4 Standards for Bicycle and Pedestrian Facilities

A. Bicycle and pedestrian facilities shall be clearly marked using NCDOT standard markings, or shall be based on the Manual on Uniform Traffic Control Devices.

B. Adjacent public greenways shall be connected to bicycle and pedestrian facilities on the site.

C. Bicycle and pedestrian connections shall be made to any existing or proposed off-site bicycle or pedestrian facilities.

~~Unless an alternate walkway is approved, conventional sidewalks within the Urban Growth Area shall be located as follows:~~

~~Sidewalks and trails shall be located as shown on the approved Preliminary Plat and shall be constructed to applicable City, County, or NCDOT standards.~~

~~On both sides of major and minor thoroughfares (as defined by the adopted Thoroughfare Plan) except on freeways.~~

~~On one side of collector streets and nonresidential streets with existing or projected traffic of 2,000 or more vehicles per day.~~

~~On one side of residential streets of all types that are not cul-de-sacs.~~

~~When the Approving Authority determines that the construction of a conventional sidewalk is impractical because of impending street widening or physical, functional or pedestrian service limitations, an alternative walkway which adequately serves the projected pedestrian traffic may be approved where there is a legal entity responsible for construction and maintenance.~~

~~On one or both sides of local streets in nonresidential areas where review indicates that sidewalks are, or will be, needed to accommodate pedestrian traffic.~~

~~If a conflict exists between these standards and the provisions of the Subdivision Ordinance, then the stricter requirements shall apply.~~

12.4.5 Dimensions and Locations

A. Sidewalks

1. In general, sidewalks shall be a minimum of five feet in width and shall be constructed of concrete unless an alternate material is approved by the City Public Works Director, or Designee. ~~Alternate dimensions and materials may be approved by the City Engineering Department.~~

2. For conventional sidewalks, sufficient right-of-way shall be dedicated to ensure that on roads with curb-and-gutter a grass strip a minimum of three feet in width lies between the sidewalk and the roadway, or, if such a strip is not feasible, the minimum width of the sidewalk shall be six feet. Along strip-paved roads sidewalks shall be located behind the roadside ditch or guardrail.

B. Bicycle Facilities

Either wide outside travel lanes or bicycle lanes, as determined by the City Public Works ~~Director Department~~ or NCDOT, or appropriate designees, shall be a part of any road improvement made on roadways which are indicated as bicycle routes on either the ~~City's Durham Urban~~ Trails and Greenways Master Plan or the Metropolitan Planning Organization's ~~Regional Bicycle~~ Transportation Plan.

C. Standards

The following table illustrates the standards for accommodation of bicycles and pedestrians by planning tier. All street design standards shall be established by the City Public Works Director or NCDOT, or appropriate designees.

Standard (by Tier)	Rural	Suburban	Urban	Downtown or Compact
PEDESTRIAN FACILITIES				
Public sidewalk, 5 feet minimum, all roadways (see Sec. 12.4.2)	NO	YES	YES	YES
Pedestrian crossing treatment at intersections (marked crosswalk, bulb-out, hot button etc.)	NO	YES	YES	YES
Pedestrian routes in parking areas protected from vehicular traffic	NO	YES	YES	YES
BICYCLE FACILITIES				
Bike lanes on all thoroughfares, either 4-foot minimum width striped outside gutter edge or 14-foot outside lanes, determined on a case-by-case basis	YES	YES	YES	YES

12.4.6 Payment-In-Lieu (City Only)

When the approving ~~body~~ authority determines that the construction of a required conventional sidewalk or alternate walkway is unfeasible due to special circumstances, including but not limited to: impending road widening, significant street trees, ~~or severe roadside conditions, or limited pedestrian volumes~~; the approving ~~body~~ authority ~~may~~ shall require either: (1) a payment-in-lieu of sidewalk construction; ~~or~~ (2) construction of sidewalks in the general vicinity of the project site; or (3) a combination of a conventional sidewalk, alternative walkway, or payment-in-lieu ~~of a fee~~.

Sec. 12.5 Recreation Land

12.5.1 ~~Park, open space, greenway and railroad corridors~~ Provisions for both active and passive recreation areas, including parks, greenways, and trails open space, consistent with adopted City or County policies, plans, and regulations, ~~including but not limited to the Durham Urban Trails and Greenways Masterplan and the Durham County Open Space Plan~~, shall be made for all subdivisions. All such land, dedicated or reserved, shall satisfy applicable City or County site suitability standards. ~~with respect to location, accessibility, size, configuration, slope, etc.~~

12.5.2 ~~In addition to the required payments or dedications listed below, the subdivider is~~ The applicant shall be responsible for the reservation of ~~additional needed~~ recreation areas, including parks, trails open space, greenways, and railroad corridors needed to mitigate against impacts from the proposed development according to the reservation procedures prescribed under Sec. 3.6.6F, Reservation of Public Facility Sites and Lands.

12.5.3 Within the Rural Tier, ~~remainder of the County, outside of the Urban Growth Area,~~ the ~~subdivider is applicant~~ shall be responsible for either:

- A. Dedicating 1,150 square feet of land for recreation purposes (including active and passive recreation open space areas, including trails) for each proposed dwelling unit; or
- B. Making payment-in-lieu equivalent to the tax value of 1,150 square feet of comparable property per dwelling unit.
- C. The County shall establish recreation service districts, and payments made under this section shall be expended within the respective district from which collected.

12.5.4 In all other Tiers, the ~~subdivider is~~ applicant shall be responsible for:

- A. Paying a recreation impact fee or dedicating 575 square feet of land for parks and active recreation areas for each proposed dwelling unit; and
- B. Paying a resource based recreation open space impact fee or dedicating 575 square feet of land for passive recreation (~~open space~~) areas (including trails) for each proposed dwelling unit. The ~~subdivider~~ applicant may make payment-in-lieu equivalent to the tax value of 575 square feet of comparable property per dwelling unit.
- C. Where recreation service districts have been established, payments made under this section shall be expended within the respective district from which collected.

12.5.5 The approving authority shall decide during the Review and Approval process as to which of following shall be required:

- A. Dedication of land;
- B. Payment-in-lieu of dedication; or
- C. Payment of an impact fee.

- 1 D. In addition, the approving authority shall decide whether the reservation of land
2 shall be required.
3

4 **Sec. 12.6 Railroad Corridors**

5 **12.6.1** To minimize the loss of existing or former railroad corridors which may have public
6 value as corridors for other forms of transportation, railroad corridors designated for
7 preservation on a plan adopted by ~~a~~ the governing body ~~must~~ shall be identified on
8 ~~zoning~~ development plans, site plans and subdivision plats.

9 **12.6.2** The rail bed and original right-of-way shall be designated for the purpose of
10 dedication or reservation in accordance with requirements for dedication and
11 reservation of recreation and open space. ~~in Sections 5M and 7D of the Merged~~
12 ~~Durham Subdivision Ordinance.~~

13 **12.6.3** No additional at-grade crossings of the corridor by streets or drives shall be allowed,
14 ~~unless~~ However, the approving authority may allow such crossings where
15 documentation shows that extreme hardship would result to the property owner
16 from lack of access, or from design constraints severely limiting the development
17 capability of the property. ~~Application materials and other Documentation before the~~
18 ~~approving body~~ shall address the nature and urgency of the hardship. Crossing of
19 the railroad right-of-way ~~shall be~~ is permitted for major and minor thoroughfares
20 designated on an adopted thoroughfare plan.

21 **12.6.4** Dedicated railroad corridors shall reduce the ~~subdivider's~~ applicant's obligation to
22 dedicate recreation ~~land or open space~~ under Sec. 12.5, Recreation Land, by the
23 amount of the corridor dedicated.
24
25

Sec. 12.7 Water and Sanitary Sewer Systems

12.7.1 Water and Sanitary Sewer Systems

A. General

Proposed additions to public systems shall be coordinated with the existing systems and shall satisfy the design and construction standards and specifications of the utility providing the services. Where not otherwise prohibited by local ordinance, community systems, or systems designed to serve more than one user independent of public systems, shall satisfy the standards of the applicable ~~County or State~~ agency responsible for approval.

B. Public

Installation of improvements which are extensions to existing public systems shall be approved by the ~~municipal or other~~ public utility providing the services. Sanitary sewer systems may be extended into the Rural Tier only when in conformance with Sec. 8.8.2F.

C. Community

Where allowed, installation of community systems which are designed to serve more than one user independent of public systems, shall be approved by the responsible ~~county or State~~ agency. Developments Subdivisions utilizing community systems shall not receive final ~~Final Plat~~ approval until the developer subdivider furnishes an attorney's certification that appropriate legal documents, including performance guarantees, have been filed for perpetual system operation and maintenance.

12.7.2 On-Site Water Supply and/or Wastewater Disposal

Soils evaluation by a qualified soil scientist, early in the approval process, is recommended where the use of individual on-site wastewater disposal systems is anticipated.

Sec. 12.8 Stormwater Management

12.8.1 Stormwater Management

- A. ~~Properties and waterways downstream from land development sites may be adversely impacted from increases in volume, velocity, and peak flow rates. Any land-disturbing activity which results in an increase of impervious area may be required to provide stormwater management facilities or make other improvements to the existing drainage system to address water quantity concerns, water quality concerns, or both if the proposed development will increase potential flood damages to existing properties or significantly increase pollutant levels in downstream receiving waters.~~
- B. ~~Drainage~~ Stormwater management facilities adequate to accommodate a ten-year or greater storm shall be provided that generally following the existing natural drainage systems. Piping and modification of streams and other natural water courses should be minimized and shall be considered on a case-by-case basis to determine if it is necessary and environmentally sound. Such facilities systems shall be designed, constructed and maintained to minimize flooding, protect downslope properties, and preserve water quality, and adequately transport existing and projected stormwater flows.
- C. ~~The owner of the property proposed for~~ Development plans, site plans, and preliminary plats shall submit require a stormwater impact analysis that complies with the requirements of the City Public Works Director or County Engineer, or appropriate designees, and which determines the impact of the increased stormwater runoff on downstream stormwater facilities and properties. ~~whenever the peak runoff rate from either the 2-year storm or the 10-year storm increases by more than 10 percent as a result of the proposed development.~~
- D. The need for stormwater management facilities to address offsite impacts shall be determined by the City Public Works Director or County Engineer, or their designees, as appropriate.

12.8.2 Regulation

- A. City Stormwater
City stormwater facilities shall be regulated pursuant to the applicable City code.
- B. County Stormwater
County stormwater facilities shall be regulated pursuant to the applicable County code.
Stormwater management facilities shall be designed and maintained in accordance with

Sec. 12.9 Other Utilities

12.9.1 Installation

- A. The ~~applicant~~ subdivider shall arrange for the coordinated installation of all other proposed utilities, including gas, electricity, and communications improvements, and shall ensure that site plans, preliminary plats, and final plats clearly show all related easements and right-of-way.
- B. Utilities shall be installed underground unless it is not feasible to do so, as determined by the Planning Director, or designee.

Sec. 12.10 Sedimentation and Erosion Control

12.10.1 Purposes

- A. This ~~Section~~ article is adopted for the purposes of:
1. Regulating certain land-disturbing activity to control accelerated erosion and sedimentation in order to prevent the pollution of water and other damage to lakes, watercourses and other public and private property by sedimentation; and
 2. Establishing procedures through which these purposes can be fulfilled.
- B. No person shall undertake any land disturbing activity subject to this Section without first obtaining a permit therefore from the Sedimentation and Erosion Control Officer, or designee.

12.10.2 Scope and Exclusions

- A. This Article shall apply to land-disturbing activities undertaken by any person within the planning jurisdictions of the County and City of Durham, with the following exclusions:
1. Land disturbing activities for the purpose of fighting fires;
 2. Land disturbing activities for the stockpiling of raw or processed sand, stone or gravel in material processing plants and storage yards, provided that sediment control measures have been utilized to protect against off-site damage;
 3. Land disturbing activity that is less than 12,000 square feet in surface area. In determining the area, lands under one or diverse ownership being developed as a unit will be aggregated. Notwithstanding this provision, an erosion control plan may be required by the Sedimentation and Erosion Control Officer, or designee when off-site damage is occurring, or if the potential for significant off-site damage exists. Additionally, this Section may apply when the applicant, or a parent, subsidiary, or other affiliate of the applicant has engaged in the activities enumerated in Sec. 3.8.2.
 4. Land disturbing activities ~~Those~~ undertaken on agricultural land for the production of plants and animals useful to man, as set forth in NCGS § 113A-52.01, including but not limited to:
 - a. Forage and sod crops, grain and feed crops, tobacco, cotton and peanuts;
 - b. Dairy animals and dairy products;
 - c. Poultry and poultry products;
 - d. Livestock, including beef cattle, sheep, swine, horses, ponies, mules or goats, including the breeding and grazing of any or all such animals;
 - e. Bees and apiary products;
 - f. Fur animals;
 5. Land disturbing activities ~~Those~~ undertaken on forest land for the production and harvesting of timber and timber products and which are conducted in accordance with best management practices set out in Forest Practice Guidelines Related to Water Quality, as adopted by DENR ~~the Department~~. If

land-disturbing activity undertaken on forestland for the production and harvesting of timber and timber products is not conducted in accordance with Forest Practice Guidelines Related to Water Quality, the provisions of this Article shall apply to such activity and any related land-disturbing activity on the tract;

6. Land disturbing activities undertaken by persons as defined in NCGS § 113A-52(8) who are otherwise regulated by the provisions of the Mining Act of 1971, NCGS § 74-46--74-68;

7. Land-disturbing activity over which the state has exclusive regulatory jurisdiction as provided in NCGS § 113A-56(a); and

8. Land disturbing activities undertaken for the duration of an emergency, activities essential to protect human life.

B. This section shall not require ground cover on cleared land forming the future basin of a planned reservoir.

12.10.3 General Requirements

A. Plan Required

No person shall initiate any land-disturbing activity which uncovers more than one acre without having an erosion control plan approved by the County and city Sedimentation and Erosion Control Office.

B. Protection of Property

Persons conducting land-disturbing activity shall take all reasonable measures to protect all public and private property from damage caused by such activity.

C. More Restrictive Rules Shall Apply

Whenever conflicts exist between federal, State or local laws, ordinances or rules, the more restrictive provision shall apply.

12.10.4 Basic Control Objectives

In order for an erosion control plan to be approved, the following control objectives shall be met:

~~An erosion and sedimentation control plan may be disapproved pursuant to section 14-66 if the plan fails to address the following control objectives:~~

A. Identify Critical Areas

On-site areas which are subject to severe erosion, and off-site areas which are especially vulnerable to damage from erosion and/or sedimentation, are to be identified and receive special attention.

B. Limit Time of Exposure

All land-disturbing activity is to be planned and conducted to limit exposure to the shortest feasible time.

C. Limit Exposed Areas

All land-disturbing activity is to be planned and conducted to minimize the size of the area to be exposed at any one time.

D. Control Surface Water

Surface water runoff originating upgrade of exposed areas should be controlled to reduce erosion and sediment loss during the period of exposure.

E. Control Sedimentation

All land-disturbing activity is to be planned and conducted so as to prevent off-site sedimentation damage.

F. Manage Stormwater Runoff

When the increase in the velocity of stormwater runoff resulting from a land-disturbing activity is sufficient to cause accelerated erosion of the receiving watercourse, plans are to include measures to control the velocity at the point of discharge so as to minimize accelerated erosion of the site and increased sedimentation of the stream.

12.10.5 Land Disturbing Permits

A. A land-disturbing permit may be obtained upon submitting the fee, zoning compliance checkoff issued by the Durham City-County Planning Department, statement of financial responsibility and ownership, approved ~~sedimentation and erosion control plan~~, if required, security deposit, if required, certification that tree protection fencing has been installed, if required, by obtaining approval of the proposed project by the City or County as applicable necessary. The applicant shall submit three copies of the plan, if required, to the Sedimentation and Erosion Control Officer, or ~~their~~ designee, at least 30 days prior to commencement of the proposed activity. The Sedimentation and Erosion Control Officer, or ~~their~~ designee, shall review permit applications for land disturbing activities of one acre or less and, within 14 calendar days of receipt thereof, shall notify the person submitting the application that it has been approved, approved with modifications, or disapproved. No permit shall be issued until such time as the local government is assured that the proposed land-disturbing activity will be carried out in accordance with this Article and the approved ~~sedimentation and erosion control plan~~, if required. A land-disturbing permit application may be disapproved for the same reasons that an erosion control plan may be disapproved, as set forth in Sec. 3.8.7 of this Ordinance.

B. ~~Improvement security~~. The Sedimentation and Erosion Control Officer, or ~~their~~ designee, shall require security to assure performance of the conditions of the permit whenever a land-disturbing activity is in excess of five acres or whenever the Sedimentation and Erosion Control Officer determines the activity may result in significant off-site damage. The applicant shall be required to file with the local government an improvement security in the form of a performance bond or performance guarantee(s) approved by the County Attorney. The amount shall be deemed sufficient by the Sedimentation and Erosion Control Officer, or ~~their~~ designee to cover all costs of protection or other improvements required for conformity with standards specified in this Section article. The security shall be released when the Sedimentation and Erosion Control Officer, or ~~their~~ designee, has certified that all of the requirements of this Section article have been met. Forfeiture of the improvement security shall not release the person conducting the land disturbing activity of their obligation to install and maintain necessary erosion control measures, to stabilize the site, or any other obligation of this Section article, ~~the Act~~, or any rule or order promulgated in furtherance thereof.

- C. A land disturbing permit issued under this Section shall be prominently displayed until all construction is completed and all permanent sedimentation and erosion control measures are installed, and the site has been substantially stabilized, as required.

12.10.6 Mandatory Standards for Land-Disturbing Activity

No land-disturbing activity subject to the control of this Section ~~article~~ shall be undertaken except in accordance with the following mandatory standards:

A. Buffer Zones

Except where more stringent buffer requirements are specified in Article 8 and/or Article 9 ~~the Durham City/County Zoning Ordinance~~, the following requirements shall apply.

1. No land-disturbing activity during periods of construction or improvement to land shall be permitted in proximity to a lake or natural watercourse unless a buffer zone is provided along the margin of the watercourse of sufficient width to confine visible siltation within the 25% of the buffer zone nearest the land-disturbing activity. Waters that have been classified as trout waters by the Environmental Management Commission shall have an undisturbed buffer zone 25 feet wide or of sufficient width to confine visible siltation within the 25% of the buffer zone nearest the land-disturbing activity, whichever is greater. Provided, however, that the County may approve plans which include land disturbing activity along trout waters when the duration of such disturbance would be temporary and the extent of such disturbance would be minimal. This subsection shall not apply to a land-disturbing activity in connection with the construction of facilities to be located on, over or under a lake or natural watercourse.
2. Unless otherwise provided, the width of a buffer zone is measured from the edge of the water to the nearest edge of the disturbed area, with the 25% of the strip nearer the land-disturbing activity containing natural or artificial means of confining visible siltation.
3. The 25 foot minimum width for an undisturbed buffer zone adjacent to designated trout waters shall be measured horizontally from the top of the bank.
4. Where a temporary and minimal disturbance is permitted as an exception by paragraph A.1.. of this subsection, land-disturbing activities in the buffer zone adjacent to designated trout waters shall be limited to a maximum of 10% of the total length of the buffer zone within the tract to be distributed such that there is not more than 100 linear feet of disturbance in each 1,000 linear feet of buffer zone. Larger areas may be disturbed with the written approval of the Sedimentation and Erosion Control Officer.
5. No land-disturbing activity shall be undertaken within a buffer zone adjacent to designated trout waters that will cause adverse temperature fluctuations, as set forth in Title 15 NCAC 2b.0211, "Fresh Surface Water Classification and Standards," in these waters.

B. Graded Slopes and Fills

The angle for graded slopes and fills shall be no greater than the angle which can be retained by vegetative cover or other adequate erosion control devices or structures.

1 In any event, slopes left exposed will, within 15 working days or 30 calendar days,
2 whichever period is shorter, of completion of any phase or grading, be planted or
3 otherwise provided with ground cover, devices or structures sufficient to restrain
4 erosion.

5 **C. Ground Cover**

6 Whenever land-disturbing activity is undertaken on a tract comprising more than
7 12,000 square feet, if more than 12,000 square feet is uncovered, the person
8 conducting the land-disturbing activity shall install such sedimentation and erosion
9 control devices and practices as are sufficient to retain the sediment generated by the
10 land-disturbing activity within the boundaries of the tract during construction upon
11 and development of such tract, and shall plant or otherwise provide a permanent
12 ground cover sufficient to restrain erosion after completion of construction or
13 development. Except as provided in Sec. 12.10.7B.5 ~~subsection 14-57(b)(5)~~ of this
14 Article, provisions for a ground cover sufficient to restrain erosion must be
15 accomplished within 15 working days or 30 calendar days following completion of
16 construction or development, whichever is shorter.

17 **D. Prior Plan Approval**

18 No person shall initiate any land-disturbing activity on a tract for which an
19 ~~Sedimentation and erosion control plan~~ is required by Sec. 3.8.1 ~~section 14-66~~ of this
20 ~~article~~ Ordinance unless, 30 or more days prior to initiating the activity, an
21 ~~Sedimentation and erosion control plan~~ for such activity is filed with and approved
22 by the County ~~and city~~ Sedimentation and Erosion Control Office.

23 **E. Commencement of Activity**

24 Prior to initiating land-disturbing activity, the person conducting such activity must
25 notify the Sedimentation and Erosion Control Office of the date that such activity will
26 begin.

27 **12.10.7 Design and Performance Standards**

28 **A.** Except as provided in paragraph B.2. of this subsection, erosion and sedimentation
29 control measures, structures and devices shall be so planned, designed and
30 constructed as to provide protection from the calculated maximum peak of runoff
31 from the ten-year storm. Runoff rates shall be calculated using the procedures in the
32 USDA, Soil Conservation Service's "National Engineering Field Manual for
33 Conservation Practices," or other calculation procedures acceptable to the
34 Sedimentation and Erosion Control Officer, or their designee.

35 **B.** In high quality water (HQP) zones, the following design standards shall apply:

- 36 **1.** Uncovered areas in HQW zones shall be limited at any time to a maximum total
37 area, within the boundaries of the tract, to 20 acres. Only the portion of the
38 land-disturbing activity within a HQW zone shall be governed by this section.
39 Larger areas may be uncovered within the boundaries of the tract with the
40 written approval of the Director of the North Carolina Department of
41 Environmental and Natural Resources (DENR).
- 42 **2.** Erosion and sedimentation control measures, structures and devices within
43 HQW zones shall be so planned, designed and constructed to provide protection
44 from the runoff of the 25-year storm which produces the maximum peak rate of
45 runoff as calculated according to the United States Department of Agriculture
46 Soil Conservation Service's "National Engineering Field Manual for

Conservation Practices" or according to procedures adopted by any other agency of this state or the United States or any generally recognized organization or association.

3. Sediment basins within HQW zones shall be designed and constructed such that the basin will have a settling efficiency of at least 70% for the 40-micron (0.04mm) size soil particle transported into the basin by the runoff of that two-year storm which produces the maximum peak rate of runoff as calculated according to procedures in the United States Department of Agriculture Soil Conservation Service's "National Engineering Field Manual for Conservation Practices" or according to procedures adopted by any other agency of this state or the United States or any generally recognized organization or association.
4. Newly constructed open channels in HQW zones shall be designed and constructed with side slopes no steeper than two horizontal to one vertical if a vegetative cover is used for stabilization, unless soil conditions permit a steeper slope or where the slopes are stabilized by using mechanical devices, structural devices or other acceptable ditch liners. In any event, the angle for side slopes shall be sufficient to restrain accelerated erosion.
5. Ground cover sufficient to restrain erosion must be provided for any portion of land-disturbing activity in a HQW zone within 15 working days or 30 calendar days following completion of construction or development, whichever period is shorter.

12.10.8 Permanent Downstream Protection of Stream Banks, Channels and Slopes

A. Intent

Stream banks and channels downstream from any land-disturbing activity shall be protected from increased degradation by accelerated erosion caused by increased velocity of runoff from the land-disturbing activity.

B. Performance Standard

The land-disturbing activity shall be planned and conducted such that the velocity of stormwater runoff in the receiving watercourse at the point of discharge resulting from a ten-year storm after development shall not exceed the greater of:

1. The velocity specified according to the soil type in the following table, in Table I, for a point of discharge into a receiving watercourse with bare soil or rock banks or bed;

Materials		Maximum Permissible Velocities	
Name	Description	FPS ¹	MPS ²
Fine Sand (noncolloidal)	Cecil fine sandy loam, Pinkston fine sandy loam	2.5	0.8
Sand Loam (noncolloidal)	Appling sandy loam, Creedmoor sandy loam, Helena sandy loam, Mayodan sandy loam, Wedowee sandy loam, Wilkes sandy loam, White shore sandy loam	2.5	0.8
Silt Loam (noncolloidal)	Georgeville silt loam, Herndon silt loam, Lignum silt loam, Roanoke silt loam	3.0	0.9
Ordinary Firm Loam	Iredell loam, Mecklenburg loam, Wahee loam, Davidson clay loam, White Store clay loam-eroded	3.5	1.1
Fine Gravel		5.0	1.5
Stiff Clay (very colloidal)	Iredell-Urban land complex, White Store-Urban land complex, Mayodan-Urban land complex	5.0	1.5
Graded, Loam to Cobbles (noncolloidal)	Tatum gravelly silt loam, Nason stony silt loam, Goldston slaty (channery) silt loam	5.0	1.5
Graded, Silt to Cobbles (colloidal)		5.5	1.7
Alluvial Silts (noncolloidal)	Wehadkee silt loam, Congaree silt loam, Chewacla silt loam, Cartecay silt loam	3.5	1.1
Alluvial Silts (colloidal)		5.0	1.5
Coarse Gravel (noncolloidal)		6.0	1.8
Cobbles and shingles		5.5	1.7
Shales and Hard Pans		6.0	1.8
Gullied Land and Urban Land	These soil types are variable with respect to texture, both colloidal and noncolloidal. The amount of cut, fill and grading into the original soil could affect velocity. Average velocity is 3.0.	3.0	0.9
¹ FPS: Feet per second			
² MPS: Meters per second			

2. The velocity specified according to the type of vegetation and depth of flow in the following table, in Table H, for a point of discharge into a vegetated receiving watercourse; or

Vegetatively Protected Watercourses and Point of Stormwater Discharge			
Group No.	Vegetation	Depth of Flow (feet)	Maximum Permissible Velocity
1	Bermudagrass	<1	4
		>1	6
2	Tall fescue Reed canarygrass Kentucky bluegrass	<1	3
		>1	6
3	Grass and legumes, mixed Weeping lovegrass	<1	3
		>1	4
4	Lespedeza, sericea Red fescue Red Top	<1	2.5
		>1	2.5
5	Annuals:	<1	2.5
	Annual lespedeza (KOB)		
	Sudangrass	>1	2.5
	Small grain: (Rye, Oats, barley) Ryegrass		

Do not use vegetative protection on longitudinal parallel to flow slopes steeper than 10% except for side slopes

Annuals – Use only as temporary protection until permanent cover is established

< less than > greater than

3. The velocity in the receiving watercourse determined for the ten-year storm prior to development.

C. If the conditions enumerated in paragraph ~~B. (1), (2), or (3)~~ of this subsection cannot be met, the channel below the discharge point shall be designed and constructed to withstand the expected velocity.

D. Slope Protection

When soils with slopes as indicated in the following table, in ~~Table III~~ occur between a point of stormwater discharge and the next confluence of concentrated stormwater runoff, such areas, on- or off-site, shall be protected from accelerated erosion by diverting the stormwater discharge from those soil surfaces. Diversion may include the provision of piped, paved or armored storm drainage facilities.

Critical Soils of Durham County		
ApC	Appling sandy loam	6-10% slopes
CfC	Cecil fine sandy loam	6-10% slopes
CrC	Creedmoor sandy loam	6-10% slopes
DaD	Davidson clay loam	6-10% slopes
GeC	Georgeville silt loam	6-10% slopes
GeD	Georgeville silt loam	10-15% slopes
GIE	Goldston slaty silt loam	10-25% slopes
GIF	Goldston slaty silt loam	25-45% slopes
GrC	Granville sandy loam	6-10% slopes
Gu	Gullied land	Clayey materials
HeC	Helena sandy loam	6-10% slopes
HrC	Herndon silt loam	6-10% slopes
HsC	Herndon stony silt loam	2-10% slopes
IrC	Iredell loam	6-10% slopes
IyC	Iredell-Urban land complex	6-10% slopes
MfC	Mayodan sandy loam	6-10% slopes
MfD	Mayodan sandy loam	10-15% slopes
MfE	Mayodan sandy loam	15-25% slopes
MrC	Mayodan-Urban land complex	0-10% slopes
MrD	Mayodan-Urban land complex	10-15% slopes
MuC	Mecklenburg loam	6-10% slopes
NaD	Nason silt loam	10-15% slopes
NaE	Nason silt loam	15-25% slopes
NoD	Nason stony silt loam	10-15% slopes
PfC	Pinkston fine sandy loam	2-10% slopes
PfE	Pinkston fine sandy loam	10-25% slopes
TaE	Tatum gravelly silt loam	15-25% slopes
Ur	Urban land	
WmD	Wedowee sandy loam	10-25% slopes
WmE	Wedowee sandy loam	15-25% slopes
WsC	White Store sandy loam	6-10% slopes
WsE	White Store sandy loam	10-25% slopes
WvC2	White Store clay loam	2-10 % slopes, eroded
WvE2	White Store clay loam	10-25% slopes, eroded
WwC	White Store-Urban land complex	0-10% slopes
WwE	White Store-Urban land complex	10-25% slopes
WxE	Wilkes sandy loam	10-25% slopes

E. Acceptable Management Measures

Measures applied alone or in combination to satisfy the intent of this section are acceptable if there are no objectionable secondary consequences. The State Sedimentation Control Commission recognizes that the management of stormwater runoff to minimize or control downstream channel and bank erosion is a developing technology. Innovative techniques and ideas will be considered and may be used when shown to have the potential to produce successful results. Some alternatives are to:

1. Avoid increases in surface runoff volume and velocity by including measures to promote infiltration to compensate for increased runoff from areas rendered impervious.

2. Avoid increases in stormwater discharge velocities by using vegetated or roughened swales and waterways in lieu of closed drains and high velocity paved sections.
3. Provide energy dissipaters at outlets of storm drainage facilities to reduce flow velocities at the point of discharge. These may range from simple rip-rapped sections to complex structures.
4. Protect watercourses subject to accelerated erosion by improving cross sections and/or providing erosion-resistant lining.

F. Exceptions

This section shall not apply where it can be demonstrated, to the Sedimentation and Erosion Control Officer's satisfaction, that stormwater discharge velocities will not create an erosion problem in the receiving watercourses.

12.10.9 Borrow and Waste Areas

When the person conducting the land-disturbing activity is also the person conducting the borrow or waste disposal activity, areas from which borrow is obtained and which are not regulated by the provisions of the Mining Act of 1971, and waste areas for surplus materials other than landfills regulated by the State Department of Environmental and Natural Resources Division of Solid Waste Management, shall be considered as part of the land-disturbing activity where the borrow material is being used or from which the waste material originated. When the person conducting the land-disturbing activity is not the person obtaining the borrow and/or disposing of the waste, these areas shall be considered a separate land-disturbing activity.

12.10.10 Access and Haul Roads

Temporary access and haul roads, other than public roads, constructed or used in connection with any land-disturbing activity shall be considered a part of such activity.

12.10.11 Operations in Lakes or Natural Watercourses

Land-disturbing activity in connection with construction in, on, over, or under a lake or natural watercourse shall be planned and conducted in such a manner as to minimize the extent and duration of disturbance of the stream channel. The relocation of a stream, where relocation is an essential part of the proposed activity, shall be planned and executed so as to minimize changes in the stream flow characteristics, except when justification for significant alternation to flow characteristic is provided.

12.10.12 Responsibility for Maintenance

During the development of a site, the person conducting the land-disturbing activity shall install and maintain all temporary and permanent erosion and sedimentation control measures as required by the approved plan or any provision of this Section, the North Carolina Sedimentation Pollution Control Act of 1973, as amended and all rules and orders adopted pursuant to it, or any order adopted pursuant to this Section or the Act. After site development, the land owner or person in possession or control of the land shall install and/or maintain all necessary permanent erosion and

sediment control measures, except those measures installed within a road or street right-of-way or easement accepted for maintenance by a governmental agency.

12.10.13 Additional Measures

Whenever the Sedimentation and Erosion Control Officer, or ~~their~~ designee, determines that significant sedimentation is occurring as a result of land-disturbing activity, despite application and maintenance of protective practices, the person conducting the land-disturbing activity will be required to and shall take the additional protective action directed.

12.10.14 Existing Uncovered Areas

- A. All uncovered areas existing on the effective date of this Section which resulted from land-disturbing activity, exceed 12,000 square feet, are subject to continued accelerated erosion and are causing off-site damage from sedimentation shall be provided with a ground cover or other protective measures, structures or devices sufficient to restrain accelerated erosion and control off-site sedimentation.
- B. The Sedimentation and Erosion Control Officer, or ~~their~~ designee will serve upon the landowner or other person in possession or control of the land a written notice of violation by registered or certified mail, return receipt requested, or other means reasonably calculated to give actual notice. The notice will set forth the measures needed to comply and will state the time within which such measures must be completed. In determining the measures required and the time allowed for compliance, the authority serving notice shall take into consideration the economic feasibility, technology and quantity of work required and shall set reasonable and attainable time limits of compliance.
- C. The Sedimentation and Erosion Control Officer, or ~~their~~ designee reserves the right to require preparation and approval of an erosion control plan in any instance where extensive control measures are required.
- D. This section shall not require ground cover on cleared land forming the future basin of a planned reservoir.

Sec. 12.11 Performance Guarantees

12.11.1 Filing of Performance Guarantees

Where Required street, sidewalk, stormwater management drainage, water and/or sanitary sewer and other public improvements ~~shall be have not been~~ completed prior to the issuance of submission of a final plat for approval, the City or County ~~may approve the plat and may issue building permits. However, no~~ Certificates of Occupancy or Compliance. ~~shall be issued and~~ No permanent individual water or sanitary sewer services shall be provided until all required improvements have been completed and accepted or until an acceptable performance guarantee, sufficient to ensure completion of all required improvements, has been filed with the City or County, as appropriate. Such guarantee may be required by the City or County at any time prior to the issuance of a Certificate of Occupancy.

12.11.2 Form and Conditions of Performance Guarantee

Such guarantee may be in the form of a surety bond, letter-of-credit, or some other surety instrument acceptable to the City or County. Such guarantee shall be conditioned upon the performance of all work necessary to complete the specified improvements and the delivery of all necessary encroachment agreements, with said performance and delivery to be done within a stipulated time period. The required amount of the guarantee shall be as determined by the City or County and shall allow for administrative costs, inflation, and other contingencies.

A. Release of Guarantee

All improvements shall be completed according to the City, County, or NCDOT standards and specifications, as applicable, and ~~must~~ shall be acceptable for City or State maintenance. No guarantee shall be released until all of the appropriate agencies certify that all of the necessary improvements have been completed as required.

B. Completion

Once the conditions of the guarantee have been completed to the satisfaction of the City or County, the guarantee shall be released.

County Stormwater Requirements

Purposes

~~To establish and implement a program which will protect and enhance the quality of surface waters by controlling the amount of new and existing stormwater runoff.~~

~~To improve the water quality of the surface waters by identifying and eliminating illegal discharges to the basin through stormwater collection systems.~~

~~To maintain and protect the riparian areas.~~

Enforcement and Administration

~~The stormwater administrator, or his designee, is hereby authorized to enforce and administer the provisions of this article, and associated ordinances of the County of Durham concerning stormwater management unless a contrary intention is expressed in such other ordinances.~~

~~The stormwater administrator shall be responsible for complying with the mandates of Subchapter 2B of Title 15A of the North Carolina Administrative Code and G.S. ch. 143, art. 21, as they detail standards for local stormwater programs, including annual reporting requirements.~~

~~Whenever conflicts exist between federal, state or local laws, ordinances or rules, the more restrictive provision shall apply.~~

Design and Performance Standards

Durham County has been included in the Neuse River Nutrient Sensitive Waters Management Strategy. Accordingly, developments within this article's jurisdiction are subject to specific requirements established in the Act and its implementing rules.

Developments within the Neuse River Basin shall plan for, and implement, stormwater management controls which will limit the nitrogen load of runoff to 3.6 pounds/acre/year. Developers who have obtained an offset by participation in the North Carolina Wetland Restoration Fund established by the North Carolina Department of Environment and Natural Resources, shall plan for and implement management controls which will limit the nitrogen load of runoff from the site to six pounds/acre/year for residential development and ten pounds/acre/year for commercial or industrial development. Nitrogen export calculations shall be made using a formula approved by the stormwater administrator.

All developments shall plan for and implement stormwater management controls which will ensure that there is no net increase in peak flow leaving the site from the pre-development conditions for the one year 24-hour storm, of more than ten percent. If the development results in an increase of greater than ten percent, the developer will be responsible for installing measures which will result in no net increase. The same methodology must be used for calculating both the pre- and post-development flow rates.

Plans for all developments shall protect and maintain existing riparian areas in accordance with 15A N.C.A.C. 2B.0233 which is hereby incorporated by reference, as well as the requirements of the Durham City-County Zoning Ordinance. Consistent with the requirements of 15A N.C.A.C. 2B.0233, no developments will be approved which are proposed within the first 50 feet adjacent to a waterbody that is shown on the most recent version of either the U.S.G.S. 7 1/2 minute quadrangle topographic map or the U.S.D.A. Soil Survey of Durham, North Carolina unless the developer can demonstrate to the stormwater administrator's satisfaction that the state division of water quality has approved the development.

Maintenance and Obstruction of Stormwater Collection Systems

During the development of a site, the developer shall install and maintain all temporary and permanent stormwater control measures as required by the approved plan or any provision of this article, the Act or any order adopted pursuant to this article or the Act. After site development, the developer shall install and/or maintain all necessary permanent stormwater control measures specified in the approved plan, except those measures installed within a road or street right-of-way or easement accepted for maintenance by a governmental agency. Conveyance of the property shall not terminate the original developer's obligations under this article until such time as a replacement permit is approved by the stormwater administrator. The original developer shall include in the deed conveying the property notice of the existence of the stormwater control measures and the purchaser's obligations to maintain and inspect them and to obtain a permit and otherwise comply with the terms of this article.

The developer shall have the stormwater control measures inspected, by a registered professional engineer, a registered land surveyor, or a registered landscape architect, upon completion of their construction, and shall have additional inspections conducted to certify their maintenance and continued function per a schedule established by the stormwater administrator, or their designee, but at least annually. The developer shall transmit to the stormwater administrator a copy of all inspection reports within three working days of their being conducted.

It is unlawful for any person to place any obstruction in any stormwater collection system so as to obstruct or impede the free flow of surface water, unless same has been authorized by the stormwater administrator, or their designee.

If the stormwater administrator, or their designee, finds any stormwater collection system constructed, arranged, clogged, or in such disrepair as to impede, obstruct, or hinder the free flow of surface water in a manner which conflicts with acceptable engineering practices, or if a

planned and permitted stormwater control measure has not been installed per an approved plan, he shall give written notice to the developer of the property. This notice shall specify the problem and action necessary to remedy it, as well as the time frame for taking such corrective action and the potential for additional action under sections 14-160 and 14-162 of this article.

Illegal discharges.

It is unlawful for any person to empty or deposit in any stormwater collection system, directly or indirectly, any substance, liquid or solid, which by reason of its nature:

Is, or may become, a public health hazard endangering human or animal health;

Is a nuisance, including substances which are unsightly or malodorous, or may become so;

Interferes, or may interfere, with the free and rapid flow of surface water;

Is flammable or explosive;

Is toxic to plant or animal life;

Is corrosive, or has properties which may damage or render unsightly the stormwater collection system; or

Affects adversely the State of North Carolina classification of the stream into which the stormwater collection system discharges.

Any developer, or other person, who makes, directly, or indirectly, an illegal discharge into a stormwater collection system shall be subject to both civil and criminal penalties as provided in section 14-160 of this article.

The developer is responsible for taking immediate action to report and remove an illegal discharge occurring on its property, regardless of the source of same. Upon receiving any report of an illegal discharge the stormwater administrator shall issue notice to the developer. This notice shall specify the problem and action necessary to remedy it, as well as the time frame for taking such corrective action and the potential for additional action under sections 14-160 and 14-162 of this article.

Inspections and investigations

Agents, officials or other qualified persons authorized by the stormwater administrator may periodically inspect public and private property in order to ensure compliance with the Act, this ordinance or rules or orders adopted or issued pursuant to this ordinance, and to determine whether the measures required have been implemented and are effective in achieving the goals of this ordinance.

No person shall willfully resist, delay or obstruct an authorized representative, employee or agent of Durham County while that person is lawfully inspecting, or attempting to inspect, a development or installed stormwater collection system under this article.

City Stormwater Requirements

Division 1. Generally

Findings

Storm water poses a threat to the public health, safety, and welfare because it floods properties, erodes watercourses and channels, and pollutes streams and rivers.

By mapping, planning, constructing, operating, cleaning, regulating and maintaining natural and constructed storm water management facilities, the city reduces the adverse effects of storm water and improves the quality of groundwater, streams, rivers, and lakes in and around the city.

Providing a stable source of funding for the activities heretofore described can best be accomplished through the creation of a storm water utility. Such a utility will benefit owners and occupants of developed land in the city and other Durham citizens.

The amount of impervious surface on a property is the single most important factor affecting the peak rate of runoff, the total volume discharged, and pollutant loadings of storm water that flows from property. It is equitable to fund a storm water utility through a system in which service charges are based on the amount of impervious surface on developed land.

Establishment of Storm Water Service Charges and Credits

1 ~~Creation of Storm Water Account; Activities Of The Storm Water Services Division~~

2 ~~The storm water services division within the city engineering department is responsible for the~~
3 ~~billing for and operation of storm water infrastructure services. Storm water service charges and~~
4 ~~interest generated by such charges shall be placed in a separate city account and shall be used by~~
5 ~~the storm water services division solely for the operational costs, indirect costs, debt principal~~
6 ~~and debt service, and establishment of a reserve fund for storm water infrastructure services.~~
7 ~~The storm water services division may use funds that do not consist of storm water service~~
8 ~~charges or interest from such charges to provide other necessary storm water services.~~

9 ~~Storm Water Service Charges~~

10 ~~All developed land in the city, whether public or private, shall be subject to a storm water service~~
11 ~~charge. Exemptions shall not be allowed based on age, tax exemption, or other status of an~~
12 ~~individual or organization. Service charges may be subject to a credit system as further provided~~
13 ~~in this article.~~

14 ~~Service charges on developed land shall, as of March 17, 1997, be computed as follows:~~

15 ~~Residential units shall be charged at two (2) rates: One dollar and eighty cents (\$1.80) per~~
16 ~~month for residential units with less than two thousand (2,000) square feet of impervious~~
17 ~~surface and two dollars and seventy cents (\$2.70) per month for residential units with two~~
18 ~~thousand (2,000) square feet or more of impervious surface.~~

19 ~~Other residential and nonresidential land shall be charged two dollars and seventy cents (\$2.70)~~
20 ~~per month for each equivalent residential unit (ERU). ERUs of less than five tenths (0.5) shall~~
21 ~~be rounded down and those of five tenths (0.5) or greater shall be rounded up to the nearest~~
22 ~~whole number. There will be no service charge for other residential and nonresidential property~~
23 ~~that contains less than five tenths (0.5) ERU of impervious surface.~~

24 ~~Billing Method, Responsible Parties~~

25 ~~Bills for storm water service shall be sent at regular, periodic intervals. Storm water service~~
26 ~~charges may be billed on a combined utility bill that also contains charges for water and/or~~
27 ~~sewer service. Storm water service charges that are shown on a combined utility bill may be for a~~
28 ~~different service period than that used for water and/or sewer service.~~

29 ~~Storm water service bills for a property that receives water and/or sewer service may be sent to~~
30 ~~the customer receiving such service. However, where multiple water and sewer accounts exist~~
31 ~~for a single parcel, the storm water service bill may be sent to the property owner. Additional~~
32 ~~guidelines concerning billing will be developed by the city.~~

33 ~~The property owner is ultimately responsible for payment of the stormwater service charge for~~
34 ~~property for which the party billed has not paid the service charge.~~

35 ~~Owners and occupants of property may designate which party shall receive the stormwater~~
36 ~~service bill by completing and properly executing a form provided by the city. Such transfer does~~
37 ~~not relieve either the owner or occupant from liability for stormwater service charges if they are~~
38 ~~not paid by the party billed.~~

39 ~~Townhouse and condominium developments and other similar properties containing~~
40 ~~impervious surface in common ownership shall be charged for the total impervious surface of all~~
41 ~~commonly owned and individually owned property within the development. The stormwater~~
42 ~~service bill shall be sent to the homeowners' association or, upon official request of the~~
43 ~~association reflecting a vote in accordance with the association's bylaws, shall be divided in~~
44 ~~equal shares amongst each unit within the development and sent to the owner or occupant of~~
45 ~~each unit. A request for per unit billing must contain all information required by the city and~~
46 ~~shall be binding for the period of time specified by the city.~~

47 ~~Payment Provisions, Utility Termination~~

48 ~~Where storm water service charges appear on a combined utility bill, and a customer does not~~
49 ~~pay the service charges for all the utilities on the bill, the partial payment will be applied to the~~
50 ~~respective service charges in the following order: delinquent storm water charges; delinquent~~

1 water and/or sewer charges; capital facilities fees; current storm water charges; current water
2 and/or sewer charges.

3 Storm water service charges are due at the collection office in city hall within twenty-one (21)
4 days after a bill has been issued. Bills not paid within this time shall be charged interest at the
5 rate of one (1) per cent per month.

6 Where a property receives water and/or sewer service, if storm water service charges for that
7 property are not paid, water and/or sewer service to that property may be terminated, whether
8 or not the storm water charges were included on a combined utility bill. Termination will be
9 handled in accordance with sections 23-47, 23-47.1, and 23-48 of this chapter regarding notice,
10 appeal, and termination of utility service. Where storm water service charges have not been
11 included on a combined utility bill for a property, water and/or sewer service to that property
12 will not be terminated unless the city has sent the occupant notice of the unpaid storm water
13 service charge and possible utility termination at least thirty (30) days prior to the termination.
14 No property for which storm water service charges are outstanding is entitled to receive water
15 and/or sewer service until the outstanding storm water service charge on that property is paid.
16 No customer with a delinquent storm water service account is entitled to open a water and/or
17 sewer account at the same or different location until the delinquency has been satisfied.
18 If property is incorrectly billed, or not billed, or a bill is sent to the wrong party, the city may
19 backbill a property for up to a three year period.

20 Customers with complaints about the accuracy of storm water service charges are entitled to a
21 review as provided in section 23-47.1. No charge will be adjusted unless the complaining
22 customer has filed a written complaint with the city within one (1) year of the date the city first
23 sent the customer notice of the charge.

24 ~~Credits~~

25 The city may provide a system of credits against storm water service charges for properties on
26 which storm water facility construction or maintenance substantially mitigates the peak
27 discharge or runoff pollution flowing from such properties or substantially decreases the city's
28 cost of maintaining the storm water system. The engineering department will develop written
29 policies to implement the credit system. The amount of credit for maintenance may be limited to
30 properties that have a specified minimum impervious surface area. The city's policies may make
31 credits retroactive to the date storm water service charges were initiated.

32 A one hundred per cent credit, conditioned upon the continued maintenance of the drainage
33 systems on such properties to city standards, shall be provided to the following properties:
34 Improved public roads, not including internal roads within public facilities, which have been
35 conveyed to and accepted for maintenance by the North Carolina department of transportation
36 and which are used by the public for motor vehicle transportation; and
37 Railroad corridors and tracks.

38 The above credits are provided based on the use and utility of the above properties as
39 transportation corridors that pass through numerous private and public properties and that
40 provide independent drainage systems that are independently improved and maintained and
41 which collect and control the runoff from the properties through which the corridors pass.

42 ~~Secs. 23-207-23-209. Reserved.~~

43 Use of Storm Water Utility Funds for Construction, Improvement and Maintenance 44 Purpose and definitions.

45 This division establishes the conditions under which funds from the storm water utility will be
46 used for work on storm water system components located outside of city owned rights of way.
47 Storm water system components located within city owned rights of way play an essential
48 function in carrying storm water and the public impact when such components malfunction is
49 generally greater than when such components are located outside the rights of way. Therefore,
50 the first priority use of storm water utility funds is for maintenance of and improvements to
51 storm water system components within city owned rights of way. Storm water utility funds may

also be used to fund storm water system construction, improvement, repair, or maintenance on private property and public property outside of city rights-of-way. The city has an interest in helping to assure that components of the storm water system that have a relatively greater impact on the overall system are maintained and/or improved, whether located on public or private property. Such components are generally those that carry in whole or in part runoff from publicly maintained streets. The intent of this section is not to transfer responsibility or liability to the city for components on private property that carry such runoff. Rather, it is to establish priorities for work on such components, and to facilitate their repair and maintenance by making available storm water utility funds for such efforts.

Criteria for Use of Storm Water Utility Funds for Construction and Maintenance

The storm water system component for which storm water utility funds are proposed to be spent must carry, in whole or in part, runoff from publicly maintained streets. In addition, such component must not be owned by an entity which is receiving a one hundred per cent credit or by an entity which is getting credit for the same type of work. The determination as to whether a component is eligible for storm water utility funding, and the priority category into which the project falls, shall be made by the city engineer and this decision is not subject to appeal. In addition, projects must meet the following criteria:

The property owner, if the owner is not the city, must dedicate an easement at no cost to the city of a width, length, and type specified by the city. The dedication of such easement shall not relieve the property owner of responsibility or liability for storm water system maintenance; The project must not be located on property which is undergoing development or redevelopment unless the development/redevelopment project is funded in part by other city funds;

The project shall be the most cost effective to correct the existing problem, as determined by the city engineer. Any excess costs shall be borne entirely by the property owner;

The owner of the private property must pay the applicable owner's share of the cost of the work as determined in section 23-213, based on the preliminary cost estimate prepared by the public works director, to the storm water services division prior to initiation of the work. However, the owner may pay this share on an installment basis in accordance with an installment payment method approved by the city council for storm water system projects;

Major improvements, minor improvements, and remedial maintenance shall fall within one of the priority categories listed in section 23-212.

Priority Categories for Major Improvements, Minor Improvements, and Remedial Maintenance

The following priority categories shall be used to determine eligibility for funding and the order in which projects are initiated:

Priority one: A clear and immediate danger exists and poses a threat to personal safety or a building's structural integrity;

Priority two: A threat exists to personal safety or a building's structural integrity, but the threat is not immediate;

Priority three: Neither of the conditions specified in (1) or (2) above exists, but the work would reduce damage to property and financial loss.

Amount of Funding From Storm Water Utility Funds

The use of storm water utility funds for new construction, improvement, or maintenance projects on property outside the city rights-of-way shall be limited as set forth below. The size and scope of the project shall be determined by the public works director, and this decision is not subject to appeal.

Capital projects: One hundred (100) percent funding from storm water utility funds unless specified otherwise by the city council.

Major improvements: One hundred (100) percent funding from storm water utility funds for residential units and fifty (50) percent storm water utility, fifty (50) percent property owner,

1 with a maximum cost to each property owner of fifteen thousand (\$15,000.00) for other
2 residential and non-residential property.

3 ~~Minor improvements: One hundred (100) percent funding from storm water utility funds for~~
4 ~~residential units and fifty (50) percent storm water utility, fifty (50) percent property owner,~~
5 ~~with a maximum cost to each property owner of ten thousand (\$10,000.00) for other residential~~
6 ~~and non-residential property.~~

7 ~~Remedial maintenance: One hundred (100) percent funding from storm water utility funds for~~
8 ~~residential units. For projects costing up to five thousand dollars (\$5,000.00), sixty-five (65)~~
9 ~~percent storm water utility, thirty-five (35) percent property owner, with a maximum cost to~~
10 ~~each property owner of one thousand dollars (\$1,000.00) for other residential and~~
11 ~~nonresidential property. For projects costing more than five thousand dollars (\$5,000.00),~~
12 ~~eighty (80) percent storm water utility and twenty (20) percent each property owner for other~~
13 ~~residential and nonresidential property.~~

14 ~~Routine maintenance: One hundred (100) percent storm water utility.~~

15 **Installment Payments**

16 The property owner share of the stormwater drainage repair or improvement project cost, as
17 determined in sections 23-211 and 23-213, may be paid in installments.

18 The property owner shall submit a request in writing and a completed application for payment
19 of the cost in installments prior to scheduling the stormwater repair or improvement.

20 The property owner share of the cost shall be payable in eight (8) equal annual installments. The
21 first installment is due and payable fifty (50) days from the date the city manager or designee
22 approves payment of the cost in installments. Subsequent installments, with accrued interest,
23 shall be due and payable on the same date in each successive year thereafter until the
24 stormwater drainage project cost and interest thereon is paid in full. Installments shall bear
25 interest at the rate of nine (9) percent per annum from the approval date.

26 From and after the date that the city manager or designee approves payment of the cost in
27 installments, the cost shall be a lien on the property as provided in Chapter 52, 1998 Session
28 Laws, amending the Charter of the City of Durham. These Charter provisions shall apply when
29 any installment, with accrued interest, is not paid when due.

30 The monies collected shall be used by the storm water services division solely for storm water
31 services.

32 **Severability**

33 If any section, sub-section, paragraph, or clause of this article is held to be invalid or
34 unenforceable, all other sections, sub-sections, paragraphs, and clauses shall nevertheless
35 continue in full force and remain in effect. In addition, if the City's use of funds for any portion
36 of its storm water program is held invalid, all other funded portions of the program shall
37 continue in full force and remain in effect.
38

